

# Evolutionary understanding of corporate foreign investment behaviour: US foreign direct investment in Europe

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**Evolutionary understanding of corporate foreign investment  
behaviour: US foreign direct investment in Europe**

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February 1995

## **Evolutionary understanding of corporate foreign investment behaviour: US foreign direct investment in Europe**

Evolutionary understanding of behaviour of firms is gradually becoming more accepted in a variety of disciplines such as economics, management and organization. Contributing to a multi-disciplinary understanding of strategic behaviour, this paper analyzes foreign direct investment strategies of US firms in Europe since the second world war. Taking routinized investment behaviour, satisficing strategies and learning economies as major building blocks of an emerging theoretical framework the analysis follows the 'lagged co-evolution' of company investment strategies and changing international economic environments.

## **Introduction**

Recent theoretical developments in different fields such as economics, management and organization stress the importance of organizational learning and theoretically sub-optimal conduct as key-characteristics of a more evolutionary understanding of company behaviour. Contrary to economic text-book models of profit-maximizing strategies, an evolutionary understanding of firm behaviour to a large extent follows the assumptions of the behavioural theory regarding the general implications of bounded rationality with firms demonstrating a 'satisficing' behaviour under conditions of 'imperfect knowledge'. In particular, notions such as routinized behaviour, learning and satisficing strategies oppose more orthodox economic theories that explain firm behaviour in the light of maximizing strategies and rational choices that lead to an optimization of investment decision rules. In the 'older' strategic management literature similar 'orthodox' approaches are found in somewhat outmoded models in which rational decisionmaking procedures combined with elaborate information gathering would lead to allocative decisions exploiting competitive advantages through calculated rationality (Levinthal and March, 1993). Modern theories of strategic management often implicitly recognize the importance of bounded rationality and learning capabilities in both an analytical and a prescriptive context. Analogous concepts and topics for an evolutionary research agenda are found in recent contributions to the understanding of the dynamics of organizational change from a modified population ecology perspective (Baum and Singh, 1994). Many studies inspired by these groups of theories embrace an evolutionary understanding that, contrary to the classical Darwinian understanding of efficiency, concentrates on understanding evolutionary processes through identifying the inefficiencies of history and the many ways in which evolutionary processes generate sub-optimal outcomes (March, 1994).

So far a substantial part of modern evolutionary economic and business theory as well as the empirical analyses inspired by these theories pay attention to the implications of technological change where the 'tension' between routinized behaviour and radical change is most obvious (Nelson and Winter, 1982, Cantwell, 1989, Dosi, et al, 1988). Gradually other aspects of corporate behaviour and organization, such as diversification strategies, are also being studied from a more evolutionary perspective (Ginsberg and Baum, 1994; Teece, et al, 1994). In the present contribution we will relate the general evolutionary understanding of basic characteristics of company behaviour to corporate foreign investment strategies. We understand this foreign investment behaviour of firms to be of a somewhat similar level of complexity regarding economic, strategic and organizational changes as those that reflect

innovation and diversification.

In the next section evolutionary understanding of basic properties of firms is explained in terms of routines, satisficing behaviour and learning capabilities. This is followed by a further exploration of this evolutionary understanding of company behaviour in the context of foreign investment. The section on propositions and methodology provides the reader with both the leading questions for this contribution as well as a clarification of how these topics will be researched in the empirical section. The section with major findings provides an empirical analysis of forty years of US foreign direct investment in Europe and the UK, Germany and the 'older' European Union member states in particular. The final section discusses some of the major conclusions in terms of an evolutionary understanding of corporate foreign investment behaviour.

### **Routines, satisficing and learning**

In their seminal contribution to modern evolutionary economic theory, Nelson and Winter (1982) introduce the concept of 'routine' to describe the regular and more or less predictable pattern of corporate behaviour. These routines refer to a wide variety of characteristics of firms, the so-called 'operating characteristics' that deal with organizational aspects of production and investment behaviour. Companies are expected to follow such routines in their standard behaviour as well as when they are adapting their internal strategies to their environment. Following this evolutionary line of thinking we understand routinized behaviour to imply that firms are usually better equipped to do more of the same, in particular in a different or changing market environments, than to fundamentally change their strategies on one or more of their operating characteristics. Therefore, we can expect that there is some similarity between present and future behaviour of companies. Routines that firms have employed in the recent past will have a rather strong tie to routines to be applied in the near future. Changes in the behaviour of firms, for instance in their investment strategies, are guided by heuristics that reduce the number of alternatives through a quasi stable commitment to a particular set of alternatives for investment project selection. These organizational routines and the large degree of interdependency between past, present, and the search for new investment opportunities places company behaviour in the light of evolutionary path-dependency (Teece, et al., 1994). This path-dependency that governs a wide range of

corporate strategies and routines is not so much of a deterministic nature, but of a more complex quality as it is placed in a dialectic process of the overall business opportunities and competitive forces on one side and the search processes and satisficing behaviour of the company on the other. In other words, this evolutionary path-dependency implies that the ex-ante selection process of potential investment projects within companies, guided by existing routines and search procedures, already limits the number of 'potential' projects with competitive forces in the market once again reducing the number of successful projects. Through experience, companies learn about the potential benefits of investment projects, limiting themselves to a number of alternatives.

To a large extent the assumption of satisficing behaviour of firms in much of modern evolutionary and population ecology theory is borrowed from the behavioural theory as mainly inspired by Simon (1956, 1987). Contrary to orthodox economic theory the behavioural school has placed its concept of the firm as a coalition of groups within an organization aspiring, on the basis of limited information and uncertainty, a set of more or less vaguely specified and often contradictory goals (Devine, et al., 1979). Under these assumptions rationality can no longer be perceived in the light of maximizing behaviour, but as both Simon (1956, 1987) and Cyert and March (1963) have put forward, rationality is bounded and thereby just aimed at an aspirable level at a certain moment. Firms are assumed to strive to an acceptable level for a particular corporate objective, not a maximum level. If the attainment does not reach an acceptable minimum level, sequential search will be urged. Alternatives for existing routines, first as minor modifications and in case these are unsuccessful more 'radical' alternatives are employed until the aspired level is satisfied.

These satisficing strategies of companies are also to be understood in the context of a corporate learning process that has two major characteristics. One characteristic is its repetitive nature, the other characteristic is the local scope of experimentation (Teece, et al, 1994). The local scope of learning implies that 'near neighbourhood learning' is preferred (Levinthal and March, 1993). We contend that this neighbourhood learning has a temporal dimension, i.e. short-term learning is preferred to long-term learning, as well as a spatial dimension, i.e. local learning is preferred to long-distance search for learning opportunities.

The repetitive nature of firms' learning is directly related to their existing organizational routines that turn their learning experience into cumulative learning, building upon what was learned before. This usually also restricts the degree of experimentation in which companies

are involved because most search for new opportunities and company experimentation is assumed to be local in scope. This particular understanding of corporate learning processes allows us to differentiate between routinized learning that involves gradual changes, which governs the majority of learning experiences of companies, and the much more unusual process of learning that implies radical changes in company routines. Routinized learning can be further characterized as 'exploitative learning' which adds to the existing knowledge and competencies of a firm without fundamentally changing the nature of its activities. Non-routinized learning or 'exploratory learning', involve changes in company routines and experimentation with new alternatives (see e.g. Dodgson, 1993; March, 1991). As explained by Levinthal and March (1993) the satisficing strategy of firms implies that in order to survive firms have to find a balance between exploitative and explorative learning. Effective learning combines both forms as exploitative learning ensures current viability, whereas explorative learning creates possibilities to ensure the future viability of firms.<sup>1</sup>

### **Foreign investment strategies as satisficing behaviour**

In general terms the evolutionary path of gradual changes in the spatial distribution of foreign investment by a gradually growing population of (in particular US) firms has already been analyzed in classics such as Aharoni (1966), Vernon (1971), Stopford and Wells (1972). Davidson (1980) also made an interesting attempt to explain why US foreign direct investment followed a particular pattern leading to a preference of US foreign direct investment for Canada and the UK. He found that companies first enter so-called primary foreign markets that are nearby in terms of spatial distance or similarity in product-markets, human resources, production technology and similar consumer tastes or similar culture in the more general sense. Scale economies, learning benefits and reduced uncertainty initially lead to increasing investment in those countries relative to other countries. Kogut (1983) also stresses this point of increasing investment when he refers to the sequential flows of foreign direct investment through incremental investment in already established subsidiaries. Davidson (1980) demonstrates that step-by-step other countries become more attractive for foreign direct investment as companies build-up more foreign experience and the uncertainty premium of so-called secondary markets gradually disappears.

From an evolutionary perspective this indicates that as companies have no complete information about production and market opportunities abroad they follow a piecemeal

investment strategy. Based on their existing routines they satisfy their corporate objectives by investing in those countries that not necessarily have the highest theoretically possible returns but which demonstrate a certain similarity that enables them to follow as much of their existing routines as possible. Gradually companies learn about foreign opportunities as they apply and improve on their local search. However, the characteristics of their satisficing strategy - the slack due to exploitative learning by most firms building on existing routines, with only a few following more exploratory strategies - implies that foreign direct investment behaviour lags behind what could be expected under conditions of profit maximizing behaviour. It is important to stress that from an evolutionary perspective economic and cultural similarities can only explain part of the initial irregularities in foreign direct investment. They can demonstrate the preference of companies for primary markets and the sequence of investment based on installed foreign capital. However, these economic and cultural similarities can not explain the still existing lag with which foreign direct investment is dispersed over a larger group of countries once the uncertainty premium of secondary markets has faded. Based on the assumptions of an evolutionary understanding of company behaviour we can clarify why firms stick to investment routines and relatively slow local learning that obstructs sudden changes and thereby causes 'sub-optimal' levels of foreign investment. In other words, from an evolutionary perspective we expect firms to gradually adapt their investment strategies with a prolonged preference for countries in which initial investments were made as they stick to their existing routines creating sequential flows of foreign direct investment.

In addition to this we have to stress that the selection environment of companies and the competitive pressures that constitute this selection environment are also changing, although step-by-step and not parallel. This implies lags in matching evolutionary adjustment to changing environments, so called 'lagged co-evolution'. Evolutionary processes do improve the match between the current state of companies and their environment, although convergence will not necessarily be achieved by any particular time (March, 1994). In more concrete terms and related to the empirical context of this paper: the complex, combined processes of macroeconomic developments, economic policies, and strategies of large groups of companies lead to a gradually more integrated global economy. This implies that, despite the lag in the process of internationalization of individual companies, the environment for companies is becoming more international. As both domestic and foreign markets and



industries become more international, the spatial distribution of foreign investment opportunities is also changing. With companies gradually increasing their foreign investment over a larger number of countries, the population of primary and secondary markets changes as well. Over time the locus of foreign investment changes when firms adjust their organizational routines and search for investment opportunities in their gradually changing environment.

### **Propositions and methodology**

The above enables us to formulate a number of propositions regarding the evolutionary understanding of corporate foreign direct investment behaviour. These propositions will guide our empirical analysis in the next section.

1. *Due to satisficing behaviour, quasi stable commitment to a limited number of investment alternatives, and a preference for exploitative learning, foreign investments of companies from a particular country will initially be concentrated in those countries of an international region that most resemble the home market, i.e. during the early stage of foreign direct investment growth this increase is concentrated in primary foreign markets.*
2. *With companies gradually increasing their experience in foreign operations and routinized learning being paralleled by non-routinized, explorative learning of foreign investment opportunities, there will be a gradual diffusion of foreign investment across a wider economic and geographic space. That is, the international distribution of foreign direct investment within a particular geographic region will diffuse, leading to investment in secondary markets. However, this growth of investments in secondary markets will initially be sub-optimal relative to the increase in primary markets of the same region.*
3. *As economic and de facto market integration takes place within a given economic region, foreign investment activity moves from sub-optimal levels, in terms of market growth potentials, towards less sub-optimal levels. This will result in a narrowing of the distinction between primary and secondary markets.*

In illustrating these propositions we shall concentrate on foreign direct investment activity by

US companies. Specifically, throughout this paper we shall focus on US manufacturing foreign direct investment, excluding, wherever possible, foreign direct investment in services and primary sectors. The process of learning can be seen as of secondary influence on location decisions for firms engaged in these latter sectors. In the case of services, foreign direct investment location decisions are often made to seek economies of agglomeration as is the case with financial sectors. For instance, banks have 'always' preferred to set up branches in the main banking centers such as London and Zurich. Until recently this preference for agglomeration was enhanced by national restrictions on foreign direct investment in service sectors such as insurance, transportation and utilities. In the case of the primary sector, the learning process in foreign direct investment is relatively unimportant when dealing with natural resources that are location specific. Such investment decisions are often based on the cost of extracting resources, and do not generally involve the sort of learning processes we refer to in this paper. The choice of location is often based on absolute advantage of a scarce resource.

We shall also limit our analysis of the foreign direct investment activities of US manufacturing companies to a comparison between their activities in the UK and in the six countries that originally formed the EEC, with a special emphasis on Germany.<sup>2</sup> These countries are France, Germany, Italy, Netherlands, Belgium and Luxembourg. We put particular emphasis on Germany since Germany and the UK have similar economic features, both in terms of population and GDP, and provide a more direct comparison than between the UK and the EC6 as a group. The EC6 countries represent the 'secondary markets' while the UK represents the 'primary market'. We shall focus on US foreign direct investment manufacturing activities in the post World War II era due to the severely limited data prior to 1950. In order to avoid the effects of German reunification, we shall limit our analysis until 1990.

For reasons of consistency and comparability the foreign direct investment data used throughout this paper is based on US Department of Commerce estimates as published in the Survey of Current Business. Unless otherwise specified, foreign direct investment data refers to US foreign direct investment manufacturing stocks on a historical cost basis (i.e. book values) which are nominal in nature. Sales data would have been preferred but these are unavailable at the level of industrial and sectoral disaggregation for the entire period in question. Sales data, being flow figures, can be re-evaluated to provide real values. However,

we follow the generally accepted practice in the foreign direct investment literature (see Dunning 1993a for a review) of using stock levels which are regarded as a monotonic function of sales data.

The use of stock data on a historical cost basis is inhibited by the fact that it leads to underestimation because of different age distributions of stock. Although recently several attempts have been made to estimate US foreign direct investment stock levels in 'real' terms by re-estimating them on a market or replacement cost basis, data generated by these methods are not available on the required level of disaggregation for our purposes, and tend to require restrictive assumptions that introduce biases of their own (see Cantwell and Bellak, 1994, for a review).

In evaluating satisficing behaviour in foreign investment some measure of profitability would have been desirable. Several authors including Krause (1968), Dunning (1969, 1993b) and Dunning and Narula (1994) have proxied profit with rate of return, which is calculated by dividing the net income (after taxes) by the average of the stock levels at the beginning and end of that year. This has several limitations. Firstly, by using historical stock figures a bias is introduced, since the assets are not depreciated given that different countries have different ages of US foreign direct investment stock. Secondly, due to transfer pricing practices by multinational companies to minimize tax burdens, net income is not always accurate, unless adjustments are made to allow for royalties and license fee payments. While it can be useful to evaluate the changes in profitability at a single location over time, it cannot be used without great caution to compare profitability between countries. Instead, we will assume that the domestic growth rate of the country in question proxies the profit potential for companies operating in that environment. If multinational firms seek to maximise, they should, *ceteris paribus*, seek locations where the profit potential is highest. In evaluating the growth of the domestic economies of the host countries it would be preferable to use real value added activity or gross output in manufacturing. These are also unavailable in a sufficiently long time series. We shall therefore proxy these by GDP. GDP in 1980 prices is derived from estimates in Maddison (1991), while nominal GDP is based on OECD estimates. Population and exchange rate data is derived from various issues of the IMF - International Financial Statistics.

To circumvent data restrictions we shall use the following relative measures of foreign direct investments:

- We evaluate the share of US foreign direct investment stocks in a given country to the total US foreign direct investment stocks in a given year.
- We take a ratio of the growth rate of US foreign direct investment stock to the growth rate of real GDP in 1980 prices. It is important to realise that foreign direct investment is a nominal number, such a ratio is primarily meant to examine the trend over time, rather than to indicate the significance of the absolute value of this ratio.
- The ratio of US foreign direct investment stocks to nominal GDP provides a proxy for the significance of the activities of US internationally operating companies in the domestic economy.

Another important indicator used in this paper is the so-called foreign direct investment 'imbalance coefficient'. If we take the quotient of the ratio of real GDP of any two regions to the ratio of foreign direct investment stocks in the same two locations, we are able to calculate an estimate of the imbalance coefficient in the relative levels of foreign direct investment. A ratio of 1 would indicate that, for instance, US investment activity in the two locations were proportional to the market potential, and a figure less than 1 indicates that the level of foreign direct investment is sub-optimal relative to their market sizes.

In the following we will analyze data that refer to foreign investment behaviour of US firms as a collective. Although the changes in foreign direct behaviour are the result of investment decisions by individual firms, we can only 'measure' the results of these decisions in terms of trends in foreign direct investment for the population as a whole. Individual firm data would have been preferred but the lack of these data forces us to analyze the more generalized data that are available. However, these more general data still enable us to reconstruct historical patterns in US corporate foreign direct investment behaviour and illustrate our propositions. We use the term 'illustration' explicitly to indicate the exploratory nature of our contribution. The semi-quantitative nature of our study in combination with the level of aggregation of our data does not allow for a more formal testing of hypotheses. However, in a somewhat positivist line of thinking, we contend that even aggregated data can 'do the job' in this exploratory context as they demonstrate the outcome of a complex process with relatively straightforward indicators.

## **US foreign direct investment in Europe since World War II**

At the end of the second world war, the USA enjoyed a technological and economic hegemony vis-a-vis Western Europe, and especially the EC6 and the UK. With the partial exception of the UK, a substantial part of the infrastructure as well as the production capacity in these countries was damaged or disorganized. This is apparent from a comparison of productivity in 1950 (as measured by GDP per man-hour in 1985 prices), which was \$11.39 for the US, compared to \$6.49 for the UK and \$3.5 for Germany, while the average of the EC6 was \$4.3 (Maddison, 1991, p. 274-275). The competitive advantages of US companies were at their peak at this juncture, and given the liquidity problems of the European economies after the war and the consequent strength of the US dollar, US firms were, on the whole, increasingly eager to exploit their competitive advantages through foreign direct investment.

Although US firms had been engaged in international production prior to the war, the significance of their European operations declined considerably relative to other regions. US production in Europe was at least as badly damaged by the war as European domestic production. The share of US foreign direct investment manufacturing stocks in Western Europe as a percentage of total US manufacturing foreign direct investment world-wide fell from 35.7% in 1936 to 24.3% in 1950 (US Dept of Commerce 1953).<sup>3</sup> This suggests that, if we base our estimates on the historical demand for the output of US affiliates, there was considerable opportunity for the expansion of US foreign direct investment.

The UK has historically been the preferred destination for US foreign direct investment in Western Europe, and the single most important destination outside North America. Even as early as 1929, the UK was host to 6.44% of US foreign direct investment stocks worldwide, and 35.9% of foreign direct investment stocks in Europe, compared with Germany, which was host to less than half that amount. By 1950, there had been a recovery of US foreign direct investment stock levels: total US foreign direct investment in the UK as a percentage of the worldwide foreign direct investment stock of US companies was 7.1%, and as a percentage of US foreign direct investment in Europe the UK took 49.2% of the total. On the other hand, US foreign direct investment in Germany had fallen in relative terms, from about half that invested in the UK in 1929, to a quarter in 1950. The situation was similar for all the other countries of what later became the EC6. Although these figures include foreign direct investment in all sectors<sup>4</sup>, they are nonetheless indicative that in 1950,

the significance of US manufacturing foreign direct investment in the UK, was at least as great as it had been prior to the war, if not greater. They also indicate that US foreign direct investment in the EC6 countries had not recovered to the same extent, and even declined relative to their pre-war levels.

However, it is important to realize that the opportunities for growth of US foreign direct investment were considerably greater in the EC6 than in the UK, where the significance of US companies in the domestic economy was much greater. One of the measures of the significance of US investment to the domestic economy is the ratio of foreign direct investment stocks to GDP in current prices. The ratio of the US foreign direct investment stocks in manufacturing to GDP of the host country (see figure 1) were 1.5%, 0.5% and 0.4% for the UK, Germany and the EC6 respectively in 1950.<sup>5</sup> Although both the GDP of the UK as well as its GDP per capita were greater than those of the individual EC6 countries, this difference is not sufficient to explain the difference in the significance of US foreign direct investment activities to the host economies, especially so in the case of Germany. Apart from the fact that US foreign direct investment in the other countries were starting from a lower base, there are several other reasons why, under conditions of maximizing investment behaviour, US foreign direct investment should have been at a higher level than it actually was in 1950:

- The opportunities for growth were higher in the EC6 relative to the UK. Firstly, the extent of reconstruction was much lower in the UK. Secondly, US multinational companies had maintained their operations in the UK during the war, while those in other countries had been sequestered or destroyed. This holds especially for Germany and France where US companies had a significant presence prior to the war (US Dept of Commerce, 1953, p 7). The 'window of opportunity' appears to have been most promising for Germany, which had the highest potential for post-war growth given its technological competence before the war<sup>6</sup>, and which also offered many opportunities created by the Marshall Plan. Although the argument has been made (e.g. Dunning 1988b, 1993b; Bostock and Jones 1994b) that higher level of investment in the UK may have partly been to supply continental Europe from a UK base, this does not take into account the demand for 'non-tradable' and perishable goods such as metals and food products, which could not be as efficiently have been supplied from the UK.
- The level of competition faced by US companies in almost all European economies

after the war was lower than prior to the war due to the destruction of the plant capacity of their domestic competitors and the shortage of capital. Thus, US companies faced a more competitive environment in the UK than in the EC6 countries.

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#### The pre-EEC years 1950-1957

The higher potential for growth suggested in the previous section was borne out by the higher growth rate of the EC6 economies during the period 1950-57, when real GDP (1980 prices) grew at an annual average rate of 6.6% in the EC6, 9.3% in Germany and 3.2% in the UK. The growth rate of US foreign direct investment in these same three locations was 14.8%, 16.3% and 12.5% respectively. While the growth rates of US foreign direct investment were much higher than those of real GDP, it should be noted that foreign direct investment is measured in current terms. Furthermore, the differences in growth rates between locations provide some evidence of the sub-optimal level of US foreign direct investment. The differential between the GDP growth of Germany and the UK was almost 6%, while the differential in foreign direct investment growth was less than 4%. As table 1 demonstrates, foreign direct investment grew at 1.7 and 2.2 times the rate of real GDP in Germany and the EC6 respectively, while in the UK, foreign direct investment grew at an average of 4.2 times that of real GDP between 1950 and 1957. The ratio of foreign direct investment to GDP in Germany and the EC6 increased marginally (see figure 1) from 0.4% and 0.53% in 1950, to 0.63% and 0.61% in 1957 respectively, while in the UK it increased from 1.5% to 2.01% in the same years.

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More significantly, however, the share of US manufacturing foreign direct investment in the UK as a percentage of total worldwide foreign direct investment increased from 14.1%

in 1950 to 15.5% in 1957. In the case of Germany the corresponding figures were 3.21% and 4.3%, while those for the EC6 as a group were 8.3% and 11.2%. The fact that the share of the EC6 excluding Germany increased by as large a share as that of the UK and Germany together indicates that Germany, despite its high growth rate and market size was not the preferred destination of US foreign direct investment among the EC6. The fastest growth of manufacturing foreign direct investment in the EC6 countries was in Italy and Belgium (Dunning, 1969).

The data in table 2 provides further confirmation of this. The imbalance coefficient in the case of EC6 relative to the UK decreased from 0.38 in 1950 to 0.27, suggesting that foreign direct investment in the EC6 not only was not at an equilibrium level, but had actually declined relative to its market size. A similar trend is observed for Germany relative to the UK. However, the imbalance coefficient between the 'EC5' countries (i.e. EC6 excluding Germany) and Germany increased from 0.67 to 0.74. The high (and increasing) level of this coefficient relative to the other two not only indicates that the 'EC5' and Germany were closer to an equilibrium level, but confirms the observation that within the EC6, US firms had a preference for the other countries apart from Germany.

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This suggests that the investment strategy of the US companies were sub-optimal in terms of the potential market opportunities. Why then did US companies not engage in more foreign direct investment in the EC6, and especially Germany, instead of the UK given the opportunities it represented? The literature on foreign direct investment (see Dunning 1993a for a review) suggests that the UK had market conditions with which US firms were familiar - these include language and business practices- as well as the fact that the GDP per capita of the UK was more similar to that of the US than that of Germany. Given the finite capital available for foreign expansion and the correspondingly high costs of establishing plant capacity in the EC6 relative to the UK, US companies preferred to exploit markets with which the net start-up costs were lower, rather than where the opportunity for growth was highest.



In other words, the opportunities for higher growth in the EC6 were not exploited, with US companies preferring to invest in their primary market (the UK) with which they had prior experience rather than exploit their secondary markets where growth and profit could be maximized.

#### The 1957-72 period

By the second half of the 1950s, US foreign direct investment in secondary markets, such as Germany and the other EC6 countries, began to increase significantly, both in terms of the share of US worldwide manufacturing foreign direct investment, as well as in terms of the share in GDP of the host economies (figures 1 and 2). Several factors played a role in this changing importance of secondary markets.

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Firstly, the economies of the EC6 and the US, as measured by real GDP per capita of the host countries relative to that of the US, as well as in absolute terms, began to converge (see figure 3). In other words, economic conditions were becoming similar between the EC6 (especially Germany) and the UK. Furthermore, the level of productivity of these countries, and the quality of the infrastructure were also becoming increasingly similar. In fact, the situation was much better in Germany relative to the UK in terms of capital stock: the average age of capital stock in 1960 was 19.4 years in Germany compared with 24.8 in the UK. By 1970, these figures were 14.4 and 19.3 (Wolff, 1994). More importantly, however, US companies were becoming increasingly familiar with the business conditions in these countries, and were beginning to exploit the EC6 markets, and their continuing high growth

rates, which continued to outperform that of the UK.

Secondly, the setting up of the common market by the EC6 acted as an additional incentive to US companies to establish or expand their operations there. This had serious, albeit delayed, consequences for US investment in the UK, where the share of investment started to decline in the early 1960s, and continued to do so during the rest of this period. The fact that US companies relocated some of their foreign direct investment activities to the EC6 only several years after the establishment of the common market may in part be because they had expected the UK to join the EEC (Bostock and Jones, 1994a). Furthermore, the UK growth rate of real GDP stayed relatively steady at just under 3%, while that of the EC6 and Germany averaged almost 5% between 1957 and 1972. This may also explain why US manufacturing foreign direct investment growth rate after 1962 in the UK declined to almost half of its level between 1957-62. It is interesting to observe that the growth rate of foreign direct investment in the EC6 remained at a higher level than in Germany from 1962-72, indicating that US companies were to some extent treating the other EC6 markets as substitutes for investment in Germany (table 1). However, their slower GDP growth relative to that of Germany resulted in similar foreign direct investment to GDP ratio (figure 1).

Towards the end of this period, US foreign direct investment growth rates in the EC6 and Germany declined. This is probably a result of two factors:

- The imminent entry of the UK into the common market may have slowed down the establishment of new capital flows towards the EC6, since membership of the common market would have extended the privileged access to the markets of the EC6 for US companies from their UK plants.
- The high growth rates of the economies of the EC6 were symptomatic of the recovery of the domestic competitors of US companies in these countries. The average annual rate of total factor productivity between 1960 and 1970 in Germany, France and Italy was 2.58, 3.4 and 3.93, while that of the US and UK was 1.49 and 1.65 (Wolff, 1994). As such, the window of opportunity for US companies was closing, as European competitors began to catch up technologically (OECD, 1992).

By 1972, the high growth rates of the EC6 economies, which were partly a result of the common market, meant that the ratio of the real GDP of the EC6 against the UK was 3.32, up from 2.47 in 1957 (table 2). The ratio of US foreign direct investment comparing these two locations had increased from 0.67 in 1957 to 1.65 in 1972. The imbalance

coefficient increased from 0.27 to 0.5 (table 2) indicating that US foreign direct investment in the EC6 was now closer to the equilibrium level relative to its market size. As such, it would seem that the reluctance of US companies to invest in the EC6 had been gradually overcome, as they acquired more experience in operating in the EC6, and they began to learn more about the market potential of these countries. This increased participation was also due in part to the growth of the EC economies relative the US, and the increasingly homogeneous market conditions amongst the EC6 countries as well as compared to the US. As figure 3 shows, by 1972 the GDP per capita of Germany and the EC6 was closer to that of the US, than that of the UK relative to the US.

#### The 1972-1982 period

The UK entered the common market in 1973, but despite this there was no subsequent increase in the growth rate of US foreign direct investment in the UK. Throughout this period, US manufacturing foreign direct investment increased at an annual average rate of 8.5%, and this was significantly less than investment growth rate into the EC6 of 9.5% (table 1). Nor indeed, was there any discernible effect on the growth rate of its domestic economy vis-a-vis the EC6<sup>7</sup> as the UK was growing at a slower rate than the EC6 or Germany till the early 1980s.

This slowdown was, inter alia, due to exogeneous changes in the world economy during this period, the two most significant of which were the devaluation of the dollar and introduction of the floating exchange rate regime, and the oil crisis. These had a more adverse effect on the domestic growth rate of the UK than it did on the EC6 countries. As table 2 shows, GDP growth rates declined for Germany, the EC6 and the UK. However, the UK's growth rate averaged 1.7% during this period, a full percentage point less than the EC6. It is interesting to note that both the GDP growth rate and foreign direct investment growth rate of Germany was higher than the EC6 as a whole indicating a preference of US companies to invest in Germany rather than the other members of the EC6, with foreign direct investment growing at over 4.3 times the rate of real GDP growth during this period, compared with 3.3 times in the case of the EC6 as a whole, and that US multinational firms were now treating Germany as a primary market.

The share of US foreign direct investment in manufacturing in the UK declined from 14.9% in 1973 but subsequently reached an 'equilibrium' level, while that of Germany rose

for a while, before levelling out (figure 2). Furthermore, despite the low levels of GDP growth, the ratio of foreign direct investment to GDP in the UK declined throughout this period, falling from 3.7% in 1973 to 2.2 % in 1982, while that of Germany and the EC6 remained at about the same level. This clearly suggests that from the point of view of US companies, the UK had lost its preferential significance despite its entry into the EEC.

Nonetheless, the imbalance of investment between the UK and the EC6 did not substantially improve despite the high growth rates of foreign direct investment. From table 2 we see that the imbalance coefficient increased marginally from 0.5 to 0.54 over this period. However, the imbalance coefficient between Germany and the UK did increase significantly from 0.55 to 0.72. This indicates that although US companies had begun to prefer Germany to the UK, they now preferred to invest in Germany rather than the other EC6 countries, implying the attractions of European integration were not that great, despite the fact that the GDP growth rates of these countries were greater than that of the UK. In fact, the imbalance coefficient between Germany and the other EC6 countries declined from 0.75 to 0.64 between 1972 and 1982. The implication of these facts is that Germany was increasingly regarded as a primary market, and that the US companies now preferred the UK over the other EC6 countries now that the UK was a part of the EEC. Investment in the UK and Germany was to some extent a substitute for investing in the other EC6 countries.

Therefore, while US foreign direct investment in the UK may not have grown immediately after its entrance in to the EEC, it eventually led to some growth in the second half of this period. Between 1977 and 1982, for instance, US foreign direct investment grew faster in the UK than in the EC6 or Germany (table 1), despite the UK GDP growth rate being less than that of the EC6 and Germany during the same period. Furthermore, there are indications that the declining competitiveness of the UK relative to the EC6 countries, and the concurrent increasing competitiveness of these countries vis-a-vis the US may have resulted in the increase in US foreign direct investment activity in the UK during the second half of this period. Indeed, GDP per capita of the UK continued to diverge away from that of the US as well as the EC6 and Germany (figure 3). US foreign direct investment in the EC6 may have grown much slower than expected because of two factors. First, the entry of the UK into the EEC made existing US production facilities in the UK more viable than the establishment of new facilities in the other EC6 countries apart from Germany. Second, US multinational firms were no longer as competitive relative to domestic competitors in the EC6,

but were relatively competitive compared to domestic UK competitors.

### The 1982-1990 period

The most recent period of US foreign direct investment in Europe analyzed in this paper demonstrates that the significance of US foreign direct investment to the UK economy, as measured by the ratio of foreign direct investment stocks to GDP, halted its decline during this period, and stabilized at about 2.5%. Despite the high growth rates of US foreign direct investment activity, as figure 1 shows, the ratio of foreign direct investment to GDP in Germany as well as in the EC6 as a whole also stabilized. This suggests that the economies of the EC6 and the UK were growing at about the same rate as that of US firms. Indeed, the foreign direct investment growth rate in the UK was 7.2% between 1982 and 1990, greater than in Germany (5.9%) but lower than in the EC6 as a whole (8.3%) (see table 1). Some of this growth may have been due to the higher rate of UK GDP growth (3.1%) relative to the EC6 (2.2%).

Despite the high growth of US foreign direct investment activities in the UK, the fact that the ratio of foreign direct investment to GDP remained at the same level indicates that the UK's competitive position may have experienced some recovery. Total factor productivity growth in the UK was 0.92% between 1973 and 1989, the same level as in France, but higher than in Germany (0.88%) or the US (0.32%) (Wolff 1994).

The share of US manufacturing foreign direct investment in both the UK and Germany stabilized and seemed to fluctuate around an equilibrium level of 13.4% and 10.7% respectively.<sup>8</sup> The share of the EC6 as a group began to rise significantly, from 26.1% in 1982 to 29.1% in 1990, while the share of Germany rose from 10.9% to 11.1% in the same years, indicating that much of the increase in US production activities occurred in the other EC6 countries (figure 2).

Also, the imbalance coefficient between the EC6 and UK rose from 0.54 to 0.60, while the coefficient between Germany and the UK fell during this period from 0.72 to 0.63. This helps support our earlier contention that US firms were seeking alternative locations to Germany. In fact the imbalance coefficient between Germany and the other EC6 countries reached 0.95 in 1990, indicating that the EC6 countries were increasingly regarded as substitutes for each other.

The above shows that the process of integration had really begun to have some effect on US multinational firms in Europe. Apparently they were no longer demonstrating a preference for engaging in production in large markets such as Germany or the UK, with which they had most experience, but they were expanding the locus of their operations to other countries. US companies had begun to diversify their production activities to take advantage of the single market. The distinction between primary and secondary markets was beginning to blur. The fact that during much of this period, US real GDP growth outpaced that of the EC6 and the UK did not lead to a decline in US foreign direct investment growth in these countries indicates that, in that respect, US companies were not seeking to maximize profits.

## **Conclusions**

As already mentioned above our analysis using aggregated data across industrial sectors does conceal a number of aspects of the evolution of US owned production activities. Apart from the obvious lack of information on individual firms, the aggregated data also obscure some of the changes in investment patterns and the extent to which investment may be due to the changing comparative advantages of EC countries vis-a-vis the United States, as well as amongst each other. As the EC6 and UK have gradually moved from being labour-intensive towards being capital-intensive<sup>9</sup>, the nature of US production activities within these countries has probably also changed. In other words, we can expect that as these countries have undergone structural adjustment, there has been a concurrent structural adjustment of multinational activities. Production activities that were situated in these countries that required high content of labour have gradually been shifted to countries with the appropriate comparative advantage, either amongst these countries, or to other non-EC countries. The expansion of the EC to include lower-income (and more labour intensive) countries such as Spain and Portugal has undoubtedly hastened this redistribution.

This paper is not meant as an encompassing analysis of foreign direct investment considering all possible effects as for instance we abstract from changes in the US economy and the role of government intervention. Changes in the US economy and competitiveness relative to those of the host economies, such as exchange rates as well as other macro-economic factors have no doubt played some role in affecting the extent and pattern of

foreign direct investment. Also, non tariff barriers and government restrictions on the participation of foreign firms may explain some of the investment activity in certain sectors and in particular countries.

Keeping in mind these limitations in our analysis, as it can only reveal some general trends and patterns, we are still able to demonstrate the overall evolutionary pattern of corporate foreign direct investment behaviour. The previous sections do illustrate some particular traits of an evolutionary pattern of foreign direct investment behaviour as explained by our theoretical framework. As 'predicted' by the first proposition our analysis of foreign direct investment by US companies both before and during the first decade after the second world war shows that a remarkably large share of foreign investment in Europe was concentrated in the UK. A clear pattern of evolutionary path-dependency is found in what appears to be a more or less routinized and stable commitment to investment projects in the UK. This preference for the UK as a primary market due to investment strategies that can be characterized as satisficing behaviour must have led companies to exploit existing and familiar opportunities. Despite the many opportunities in other European countries US foreign direct investment outside the UK remained at sub-optimal levels for some decades after the war.

These sub-optimal levels of foreign direct investment do not imply that US firms did not gradually learn more about the investment opportunities in Europe outside the UK. As mentioned in the second proposition it was expected that gradually US firms would explore possibilities in secondary markets through non-routinized investment behaviour that paralleled some of their existing investment routines. These new investment projects should result in a gradual diffusion of foreign direct investment across Europe. However, the existing preference for the UK would still lead to sub-optimal levels of investment in the light of the growth potential of these secondary markets. The late fifties and early sixties show this expected pattern of increasing, albeit sub-optimal, US foreign direct investment in the other European countries.

Our third proposition expressed the idea of the expected learning economies through which US foreign direct investment in Europe would gradually narrow the gap between their primary and secondary markets. This process has to be understood in the context of so-called lagged co-evolution in which gradual changes in the environment of companies is both affecting and being affected by the investment strategies of groups of individual firms. At the end of the 1960s, with the EEC being well established, US foreign direct investment in the

EEC had clearly become less sub-optimal if compared to the growth potential of these economies. During the 1970s this development not only led to a narrowing of gap between primary and secondary markets, to some extent this evolution of US foreign direct investment indicated that Germany had become the primary market for US investors instead of the UK. However, from the perspective of the direction of US foreign direct investment the continuing process of economic integration in Europe further assimilated the markets of countries that established the EC. At the end of the 1980s US foreign direct investment had no particular preference for either the UK or Germany and the distinction between primary and secondary markets for the UK and within the EC6 had largely disappeared.

## References

Abramovitz, M. and David, P. (1994) Convergence and deferred catch-up. Productivity leadership and the waning of American exceptionalism, MERIT Working Paper Series No. 94/027

Aharoni, Y. (1966) The foreign investment decision process, Boston, Division of Research, Harvard Business School.

Baum, J.A.C. and J.V. Singh (1994) Organizational hierarchies and evolutionary processes: some reflections on a theory of organizational evolution, in J.A.C. Baum and J.V. Singh, Evolutionary dynamics of organizations, Oxford, Oxford University Press, pp. 3-20.

Bostock, F. and G. Jones (1994a) The growth of foreign multinationals in British manufacturing 1850-1962, University of Reading Discussion Papers in International Investment and Business Studies, Series B, Vol VI, No 181

Bostock, F. and G. Jones (1994b) The characteristics of foreign multinationals in British manufacturing 1850-1962, University of Reading Discussion Papers in International Investment and Business Studies, Series B, Vol VI, No 182



Cantwell, J. (1989) Technological innovation and multinational corporations, Oxford, Basil Blackwell.

Cantwell, J. and Hodson, C. (1991) Global R&D and UK competitiveness in M. Casson (ed), Global research strategy and international competitiveness, Oxford, Basil Blackwell

Cantwell, J. and Bellak, C. (1994) Measuring the importance of international production: the re-estimation of foreign direct investment at current values. University of Reading Discussion Papers in International Investment and Business Studies, Series B, Vol VI.

Cyert, R.M. and J.G. March (1963), A behavioral theory of the firm, Englewood Cliffs, Prentice-Hall.

Davidson, W. (1980) The location of foreign direct investment activity: country characteristics and experience effects, in Journal of International Business Studies, vol. 12, pp. 9-22.

Devine, P.J., N. Lee, R.M. Jones, W.J. Tyson, 1979 (1985), An introduction to industrial economics, London, Allen & Unwin.

Dodgson, M., (1993) Organizational learning: a review of some literatures, in Organization Studies , vol. 14, pp. 375-394.

Dosi, G., C. Freeman, R. Nelson, G. Silverberg, L. Soete, (1988) Technical change and economic theory, London, Pinter Publishers.

Dunning, J.H. (1969) Foreign capital in Europe, in G.R. Denton (ed), Economic integration in Europe, London, Weidenfeld and Nicholson.

Dunning, J.H. (1970) Technology, United States investment and European economic growth, in P. Kindleberger (ed), The international corporation, Cambridge (Mass.), MIT Press.

Dunning, J.H. (1988a) Multinational technology and competitiveness, London, Unwin Hyman.

Dunning J.H. (1988b) Explaining international production, London, Unwin Hyman.

Dunning, J.H. (1993a) Multinational enterprises and the global economy, Workingham, Addison Wesley.

Dunning, J.H. (1993b) The globalization of business, London, Routledge.

Dunning, J.H. and Narula, R. (1994) Transpacific direct investment and the investment development path: The record assessed, in Essays in International Business, No 10, May.

Ginsberg, A. and J.A.C. Baum (1994) Evolutionary processes and patterns of core business change, in J.A.C. Baum and J.V. Singh, Evolutionary dynamics of organizations, Oxford, Oxford University Press, pp. 127-151.

Kogut, B. (1983) Foreign direct investment as a sequential process, in C.P. Kindleberger and D. Audretsch (eds.), The multinational corporation in the 1980's, Cambridge (Mass.), MIT Press, pp. 38-56.

Krause, L. (1968) European economic integration and the United States, Washington D.C., The Brookings Institution.

Levinthal, A.D. and J.G. March (1993) The myopia of learning, Strategic Management Journal, vol. 14, pp. 95-112.

Maddison, A. (1991) Dynamic forces in capitalist development, Oxford, Oxford University Press.

March, J.G. (1991) Exploration and exploitation in organizational learning, in Organizational Science, vol. 2, pp. 71-87.

March, J.G. (1994), The evolution of evolution, in J.A.C. Baum and J.V. Singh, Evolutionary dynamics of organizations, Oxford, Oxford University Press, pp. 39-49.

Nelson, R.R. and S.G. Winter (1982) An evolutionary theory of economic change, Cambridge (Mass.), Belknap Press.

OECD (1992) Technology and the economy, Paris, OECD.

Simon, H.A., 1956, Rational choice and the structure of the environment, in Psychological Review, vol. 63, pp. 129-138.

Simon, H.A. (1987) 'Satisficing', in J. Eatwell, M. Millgate, P. Newman (eds.), The new Palgrave: a dictionary of economics, 4, pp. 243-245.

Stopford, J. and L.T. Wells Jr. (1972) Managing the multinational enterprise - organization of the firm and ownership subsidiaries, New York, Basic Books.

Teece, D.J., R. Rumelt, G. Dosi, S. Winter (1994), Understanding corporate coherence - theory and evidence, in Journal of Economic Behavior and Organization, vol. 23, pp. 1-30.

US Department of Commerce (1953) Direct private foreign investments of the United States: Census of 1950, Washington, Office of Business Economics.

US Department of Commerce (1959) US overseas direct investment in 1957, Washington, Office of Business Economics.

Vernon, R. (1971) Sovereignty at bay: the multinational spread of US enterprises, New York, Basic Books.

Wolff, E. (1994) Technology, capital accumulation, and long-run growth, in J. Fagerberg, B. Verspagen and N. Tunzelmann (eds), The dynamics of technology, trade and growth, Aldershot, Edward Elgar, pp. 53-74.

**Table 1 FDI and Real GDP growth rates for selected periods, 1950-**

	Annual average US mfg FDI growth rates			Annual average real GDP growth rates			Ratio of FDI to GDP			
	EC6 FRG UK			EC6 FRG UK			USA	EC6 FRG UK		
	EC6	FRG	UK	EC6	FRG	UK	USA	EC6	FRG	UK
1950-57	14.8	16.2	13.5	6.6	9.3	3.2	4.3	2.2	1.7	4.
1957-72	17.6	17.8	11.1	5.0	4.9	2.9	3.5	3.5	3.6	3.
1957-62	19.7	23.6	15.0	5.5	5.8	2.7	2.8	3.6	4.1	5.
1962-67	19.4	17.4	8.4	4.8	3.7	2.8	4.8	4.0	4.7	3.
1967-72	14.1	13.1	8.4	4.7	4.2	2.7	2.9	3.0	3.1	3.
1972-90	10.4	9.6	8.5	2.6	2.3	2.3	3.2	4.0	4.2	3.
1972-77	13.8	14.8	8.6	3.2	2.7	2.2	2.9	4.3	5.5	3.
1977-82	5.2	5.7	6.6	2.3	1.8	1.2	1.9	2.3	3.2	5.
1982-90	8.3	5.9	7.2	2.2	2.2	3.1	3.8	3.8	2.7	2.

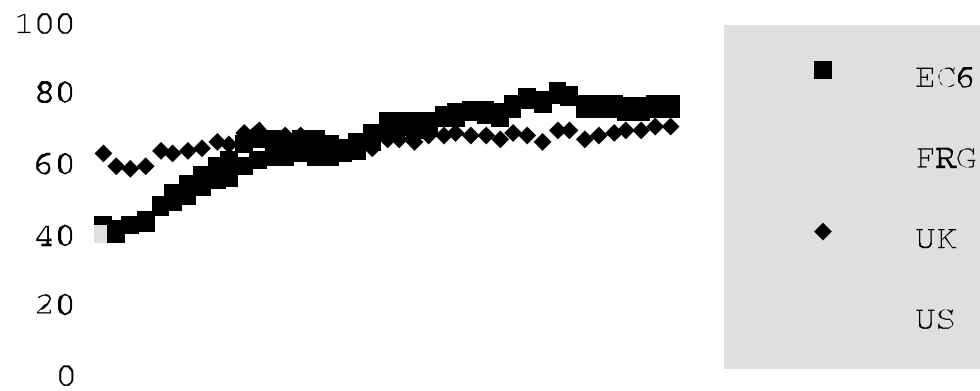
**Notes:**

1. FDI growth for 1950-57 are 1951-57

**Sources:**

FDI data derived from Survey of Current Business, v  
GDP data based on Maddison (1991), and updated for

**Figure 3: Trends in relative GDP per capita,  
1980 prices, 1950-90 (USA=100)**



**Figure 1: Ratio of FDI stock to nominal GDP,  
1950-90**

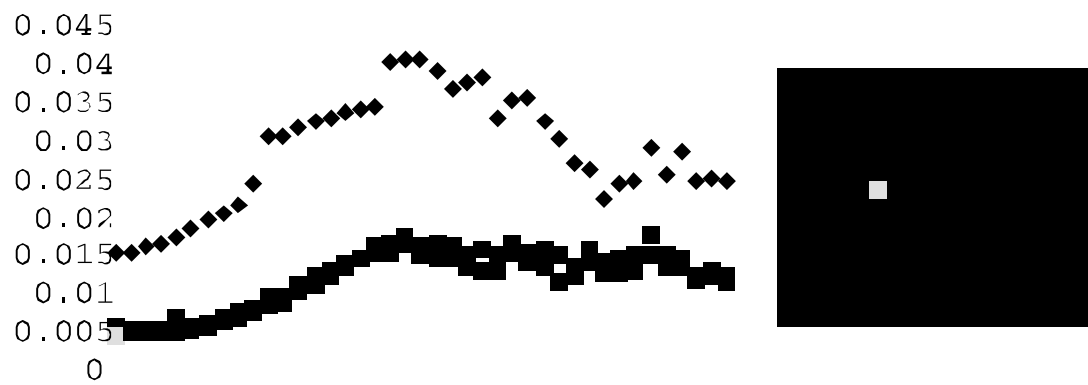
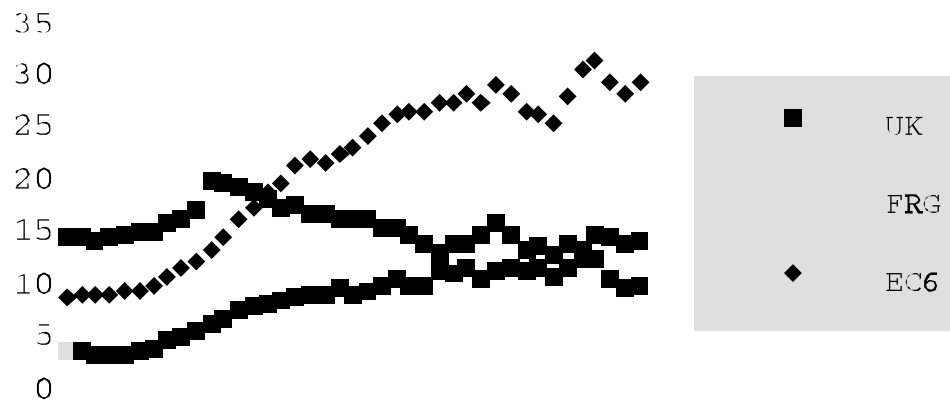


Table 2 Imbalance coefficient, selected years

	(1)	(2)	(2) (1)	(3)	(4)	(4) (3)	(5)	(6)	(6) (5)
Real GDP UK/US FDI UK	Real GDP UK/US FDI UK	imbalance coefficient	Real GDP UK/US FDI UK	imbalance coefficient	Real GDP UK/US FDI UK	imbalance coefficient	Real GDP UK/US FDI UK	imbalance coefficient	
1950	1.95	0.58	0.30	0.58	0.23	0.40	2.36	1.57	0.66
1957	2.47	0.67	0.27	0.85	0.28	0.33	1.88	1.39	0.74
1965	2.89	1.13	0.39	1.02	0.47	0.46	1.85	1.39	0.75
1972	3.32	1.65	0.50	1.12	0.62	0.55	1.96	1.63	0.83
1982	3.73	2.03	0.54	1.18	0.85	0.72	2.16	1.39	0.64
1990	3.51	2.12	0.60	1.11	0.7	0.63	2.15	2.05	0.95

Source: As for Table 1

**Figure 2: Share of US manufacturing  
worldwide, 1950-90**





1. This understanding of the 'active' and non-deterministic character of such company strategies is clearly in line with Lamarckian models of economic development and selection as found in Nelson and Winter (1982).
2. It is to be noted that all data for Germany explicitly focusses on the former West Germany.
3. Although US manufacturing foreign direct investment stocks in Western Europe actually increased in value from \$611.4 million to \$878 million between 1936 and 1943 (US Dept of Commerce, 1953, p. 49). This is accounted for in great part due to the movement of refugees, primarily from Germany, who subsequently became citizens of the US. However, by the end of the war, much of these refugee holdings had been liquidated or written off (US Dept of Commerce, 1959, pg 13).
4. Foreign direct investment manufacturing stock data on a comparable basis prior to 1950 is unavailable.
5. These figures are calculated on the basis of current prices. It is important to realize that foreign direct investment is a nominal number, and although it is possible to compare growth rates of foreign direct investment with those of real GDP, the use of such a ratio is primarily as a means to examine the trend over time. On the other hand, it is not possible to compare real GDP in 1980 prices with nominal foreign direct investment figure, and we must necessarily do so with nominal GDP.
6. For instance, of the 146 major innovations between 1915 and 1939, 13% originated in Germany, the same percentage as that of the UK, and second only to the US. In terms of US patents, Germany recorded almost twice as many US patents as the UK in 1939, and four

times that of France in 1939 (Dunning, 1988b, p 90-91).

7. Growth rates of both GDP and foreign direct investment both declined considerable in the early 1970s due to the effect of the introduction of the floating exchange rate system as well as the oil shock. However, this affected all countries within Europe to more or less the same extent, and since we are examining relative growth rates it does not influence our argument.

8. These are averages for 1982-1990, the standard deviation for the UK was 0.65% and for Germany it was 1%.

9. For instance, between 1950 and 1979 the comparative level of capital labour ratio in Germany and the UK increased from 46 for both to 105 and 64 respectively, with 100 being equivalent to the US (Abramovitz and David, 1994).